AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	1 4

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
2	28-May-2004		

6. ISSUED BY CODE

US Army Corps of Engineers, Kansas City District
760 Federal Building, 601 East 12th Street
Kansas City, Missouri 64106-2896

7. ADMINISTERED BY *(If other than item 6)* CODE

8. NAME AND ADDRESS OF CONTRACTOR *(No.,street, county, State and ZIP Code)*

CODE FACILITY CODE

(x) X

9a. AMENDMENT OF SOLICITATION NO.
W912DQ-04-B-0005

9B. DATED *(SEE ITEM 11)*
5/10/2004

10A. MODIFICATION OF CONTRACT/ORDER NO.

10B. DATED *(SEE ITEM 13)*

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above number solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [ ] is extended, [X] is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitaiton or as amended, by one of the following methods: (a) By completing Items 8 and 15, and returning___ 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegraph which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(x) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBER CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF:

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

Stilling Basin Wall Repair, Wilson Lake, Kansas

1. The Solicitation is amended in accordance with the attached pages.
2. Bid will be received until 2:00 pm, 10 June 2004, in room 748 Federal Building, 601 East 12th Street, Kansas City, Missouri 64106-2896

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR _____ *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY _____ *(Signature of Contracting Officer)*	16C. DATE SIGNED

1. SOLICITATION NO. W912DQ-04-B-0005 is amended as follows:

a. SPECIFICATIONS: Narrative Changes:

(1) Page 14 of 162, NOTES:. Note 10 is deleted in its entirety.

(2) Section 01110:

(a) New Paragraphs: The following paragraphs are new paragraphs, which are added:

1. "1.2.1.3.9 All submittals required by bid items 0001, 0002, 0003, and 0005 shall be part of the Base Contract."

2. "1.2.1.3.10 Delivery of the manhole and wall drain materials required by bid items 0002 and 0003 shall be part of the Base Contract. This does not include the granular fill material."

(b) Paragraph 1.2.3.1.1. Baseline Readings: The phrase "5 (five) days" is changed to "one full work week, Monday through Friday".

(c) Paragraph “1.2.3.5 Fish Removal” is deleted and replaced by the following paragraph:

“1.2.3.5 Fish Removal.

Dewatering of the outlet channel and stilling basin shall be coordinated with the Wilson Lake Project Office so that fish can be removed by the Kansas State Department of Wildlife and Parks prior to completion of dewatering. The Contractor shall notify the Project Office seven days prior to the start of dewatering work to allow coordination with the State.”

(d) Paragraph “1.6 FENCING OF THE EXCAVATION AND PROJECT SITE” is deleted in its entirety.

(3) Section 02231: The following paragraph is added:

“3.3.1 Primitive Access Roads.

The primitive access roads to the waste disposal area and the pervious fill borrow area shall be kept free of all vegetative growth for the duration of use by the Contractor. Risk of fire caused by hot vehicle exhaust pipes is a real concern during the hot, dry summer months. Maintenance of the primitive access roads shall be a minimum of 12 feet wide for one way traffic, and should include a turn-around at the waste disposal and pervious fill borrow areas.”

(4) Section 02315:

(a) Paragraph 2.2 - GRANULAR FILTER. The following sentence to the end of the paragraph:

"ASTM C33, size 67 is an acceptable filter material."

(b) Paragraph 2.2.1 - Granular filter (and Granular fill) Gradation. The current gradation is deleted and replaced by the following gradation:

Sieve Size	Percent by Weight Passing
1"	100
¾"	90-100
3/8"	20-55
#4	0-10
#8	0-5

(c) The following paragraph is added to Section 02315:

"3.1.5 Piezometric Data and Boring Logs.

Historical piezometric data for the two piezometers adjacent to the stilling basin and boring logs for the instrumentation adjacent to the stilling basin are provided at the end of this section.

(Plots of the piezometric data and the boring logs accompany Amendment 0002)."

(d) Paragraph 3.6.5.2. The following sentence is deleted in its entirety:

"Place but do not compact material to avoid loading upon or against structures."

(e) Paragraph 3.10. DISPOSITION OF SURPLUS MATERIAL is deleted and replaced by the following paragraph:

"3.10 DISPOSITION OF SURPLUS MATERIAL

Waste shale and soils in Government disposal area indicated on the drawings. The Disposal area shall be cleared prior to use. The disposal material shall be placed starting at the maximum distance away from the river, and the Contractor shall work toward the river as the placed material meets the adjacent top of ground. The disposed material shall be thoroughly traffic compacted. The waste shall be placed in a manner that at all times allows drainage toward the river. Maximum slope of the waste fill toward the river at completion of disposal shall be a 1V on 4H. Remove from Government property asphalt, concrete, brush, refuse, stumps, roots, and timber and dispose in an approved landfill."

b. DRAWINGS:

(1) Revised Drawing: The following drawings are deleted and replaced by revised drawings, of the same titles, dated 27 May 2004. A copy of each revised drawing accompanies this amendment.

Sheet No.	Title
C-13	OPTION 2 – TYPICAL CROSS SECTION AND GEOTEXTILE SCHEDULE
C-14	OPTION 2 – EPS WALLS PROFILE, SECTIONS AND DETAILS

(2) Narrative Changes:

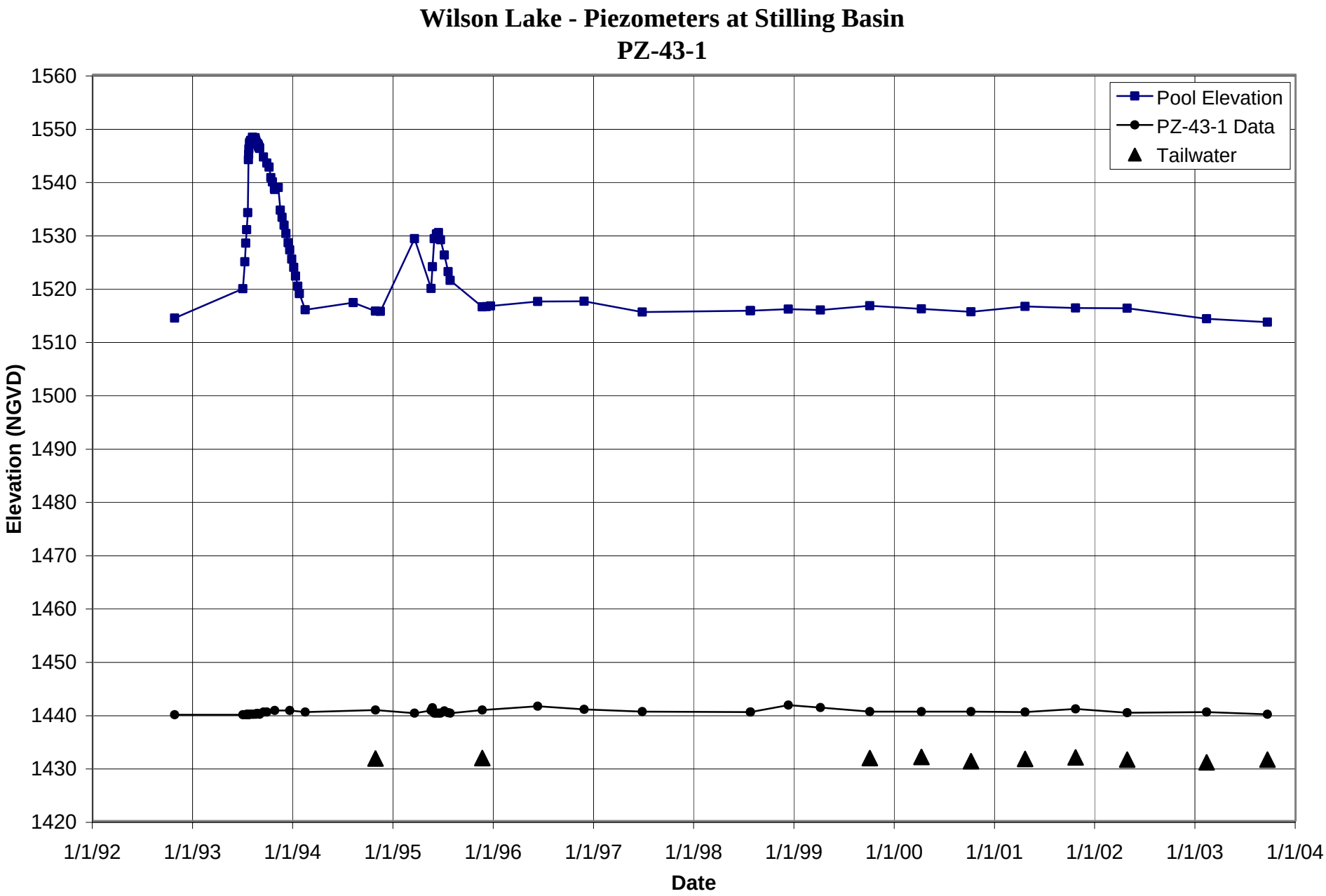
Sheets Numbers C-2, C-3, C-4, and C-11: The "construction limits" on sheets C-2 and C-11, and the "primary project site limits" on sheet C-3 and C-4 represent the same limits. The "control" for these limits is shown on sheet C-11.

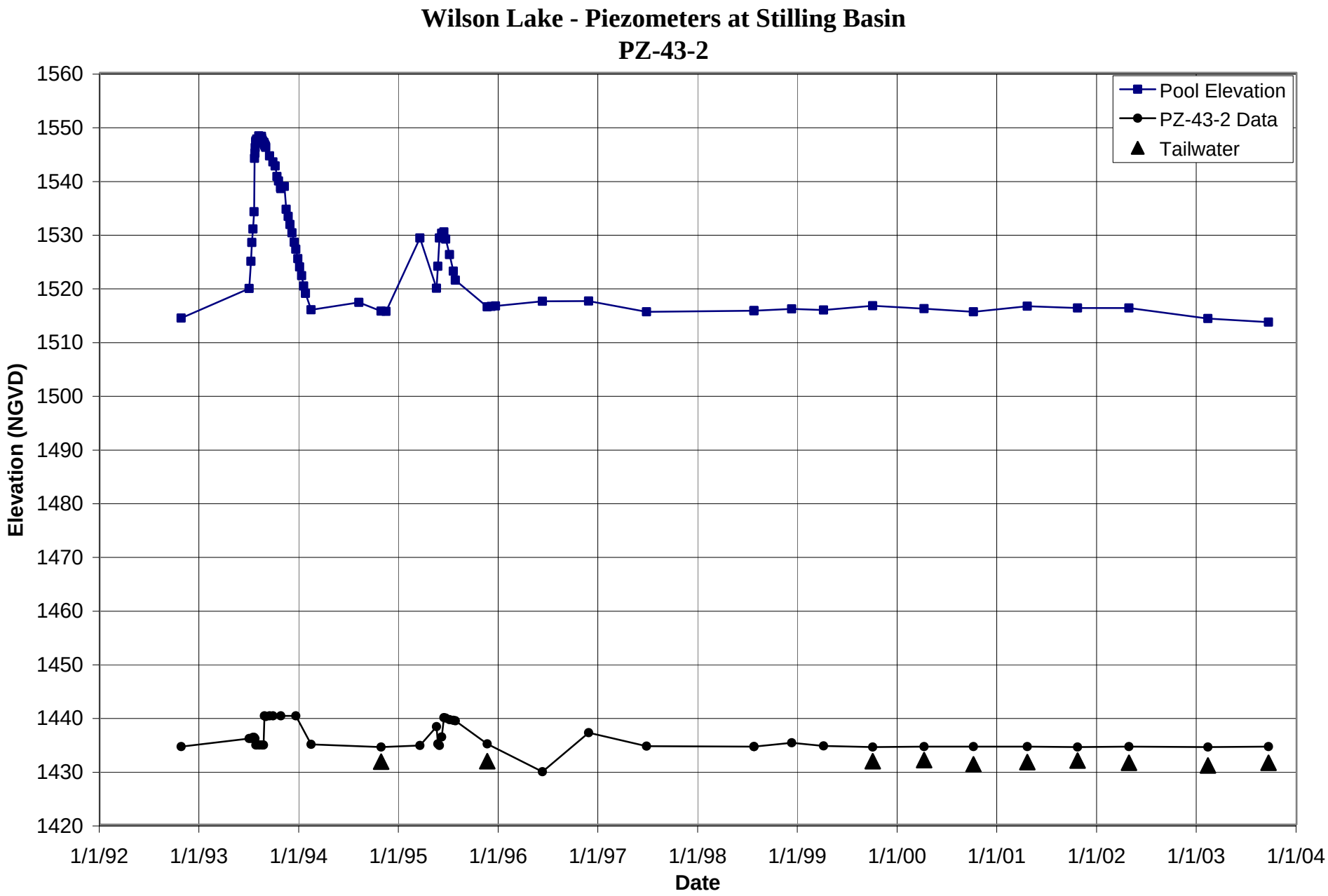
2. Bidders are required to acknowledge receipt of this amendment on the Bid Form, in the space provided, or by separate letter or telegram prior to Bid Opening. Failure to acknowledge all amendments may cause rejection of the bid.

3. Bids will be received until 2:00 p.m. local time at place of receipt of offers, 10 June 2004 in Room 748, Federal Building, 601 East 12th Street, Kansas City, Missouri 64106-2896.

Encls.

1. Drawings as listed
2. Piezometric Graphs
3. Piezometric Data
4. Boring Logs


Wilson Lake - Piezometers at Stilling Basin
PZ-43-1
Pool Elevation
PZ-43-1 Data
Tailwater
Elevation (NGVD)
1560
1550
1540
1530
1520
1510
1500
1490
1480
1470
1460
1450
1440
1430
1420
1/1/92
1/1/93
1/1/94
1/1/95
1/1/96
1/1/97
1/1/98
1/1/99
1/1/00
1/1/01
1/1/02
1/1/03
1/1/04
Date


Wilson Lake - Piezometers at Stilling Basin
PZ-43-2
Pool Elevation
PZ-43-2 Data
Tailwater
Elevation (NGVD)
1560
1550
1540
1530
1520
1510
1500
1490
1480
1470
1460
1450
1440
1430
1420
1/1/92
1/1/93
1/1/94
1/1/95
1/1/96
1/1/97
1/1/98
1/1/99
1/1/00
1/1/01
1/1/02
1/1/03
1/1/04
Date

01/01/94 34335

Date	Pool	Tailwater	PZ-43-1	PZ-43-2
12/10/98	1516.00		1441.7	1435.2
09/21/03	1513.56	1431.5	1440.0	1434.5
02/11/03	1514.19	1431.0	1440.4	1434.4
04/28/02	1516.17	1431.5	1440.3	1434.5
10/22/01	1516.18	1431.9	1441.0	1434.4
04/21/01	1516.50	1431.6	1440.4	1434.5
10/06/00	1515.47	1431.2	1440.5	1434.5
04/08/2000	1516.04	1432.0	1440.5	1434.5
10/03/1999	1516.60	1431.8	1440.5	1434.4
04/06/99	1515.81		1441.3	1434.6
12/10/98	1516.00		1441.7	1435.2
07/25/98	1515.69		1440.4	1434.5
07/25/98	1515.69		1440.4	1434.5
06/26/97	1515.45		1440.5	1434.6
11/26/96	1517.45		1440.9	1437.1
06/10/96	1517.43		1441.5	1429.8
12/21/95	1516.57			
12/06/95	1516.46			
11/21/95	1516.39	1431.8	1440.8	1435.0
07/27/95	1521.37		1440.2	1439.3
07/20/95	1523.02		1440.3	1439.4
07/06/95	1526.12		1440.6	1439.5
06/22/95	1529.00		1440.2	1439.8
06/15/95	1530.33		1440.2	1439.9
06/07/95	1530.10		1440.2	1436.3
05/30/95	1529.20		1440.2	1434.7
05/24/95	1523.95		1441.2	1435.0
05/19/95	1519.87		1440.7	1438.2
03/19/95	1529.20		1440.2	1434.7
11/15/94	1515.56			
10/28/94	1515.60	1431.7	1440.8	1434.4
08/08/94	1517.20			
02/14/94	1515.85		1440.4	1434.9
01/24/94	1518.87			
01/18/94	1520.27			
01/10/94	1522.18			
01/03/94	1523.82			
12/27/93	1525.37			
12/20/93	1527.10		1440.7	1440.2
12/14/93	1528.42			
12/06/93	1530.18			
11/29/93	1531.72			
11/22/93	1533.20			
11/15/93	1534.56			

11/08/93	1538.81		
10/26/93	1538.40	1440.7	1440.2
10/25/93	1538.60		
10/18/93	1539.83		
10/12/93	1540.66		
10/05/93	1542.63		
09/27/93	1543.36	1440.4	1440.2
09/15/93	1544.50	1440.4	1440.2
09/01/93	1546.10	1440.0	1440.1
08/31/93	1546.30		
08/30/93	1546.33		
08/29/93	1546.43		
08/28/93	1546.55		
08/27/93	1546.69	1440.1	1440.2
08/26/93	1546.82		
08/25/93	1546.95		
08/24/93	1547.05	1440.1	1434.8
08/20/93	1547.28	1440.1	1434.8
08/18/93	1547.50		
08/17/93	1547.70	1440.0	1434.8
08/16/93	1548.12		
08/12/93	1548.10		
08/11/93	1548.11		
08/10/93	1548.10	1440.0	1434.8
08/09/93	1548.11		
08/08/93	1548.15		
08/06/93	1548.21	1440.0	1434.8
07/30/93	1547.62	1440.0	1434.8
07/27/93	1547.28	1440.0	1434.8
07/26/93	1547.06		
07/24/93	1546.03		
07/23/93	1545.00	1439.9	1436.0
07/22/93	1544.02		
07/20/93	1534.08	1440.0	1436.2
07/16/93	1530.88	1440.0	1436.2
07/12/93	1528.36	1439.9	1436.0
07/09/93	1524.85		
07/02/93	1519.80	1439.9	1436.0
10/26/92	1514.31	1439.9	1434.5
04/29/92	1509.90		
10/30/91	1509.87		
10/28/91	1509.90		

8-24-1 Hole No. I 43-1A

DRILLING LOG

DIVISION: MRD

INSTALLATION: KCD

SHEET 1 OF 5 SHEETS

1. PROJECT: Wilson Dam
2. LOCATION (Coordinates or Station): See Sketch Map
3. DRILLING AGENCY: KCD USACE ED-GG
4. HOLE NO. (As shown on drawing title and file number): I 43-1A
5. NAME OF DRILLER: R.
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 18.5
8. DEPTH DRILLED INTO ROCK: 30.5
9. TOTAL DEPTH OF HOLE: 49.0
10. SIZE AND TYPE OF BIT: 6" Hollow Stem Auger, 4" core Barrel
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 750
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4 Jars; UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: 3
15. ELEVATION GROUND WATER: none encountered
16. DATE HOLE: STARTED 8/15/92 COMPLETED 8/16/92
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Fred Z Hall

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		grout			Dug down approx 2' Began 1st drive
			Rip Rap - sand - top fill	NS	N3	
	1					
	2			2.0	2.0	2.5
			2.5 2.5		NS	Drive #1
			silty lean clay, med. damp	D3.0	2.5'	3" ID Inner Barrel
	3		gray-brown	R2.0	J1	6"
			occ sand		3.0	
	4				N3	
	5		5.0 5.0	5.0	5.0	5.0
			med sand, loose, dry,			Drive # 2
			tan to lt brown		J2	6" Auger
	6		pebble to 3"	D5.0		3" Inner Barrel
				R2.0	6.0	
	7				NS	
	8					
	9					
	10					

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** I 43-1A

PROJECT: Wilson Dam | INSTALLATION: KSD | SHEET 2 OF 4 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10					Drive # 3
			10.5 10.5			6" Auger
			fine to med sand, loose,			
			damp, lt brown to tan	D5.0	NS	3" Inner Barrel
	11			R3.0		
	12				12.0	
					J3	
	13				13.0	
					NS	
	14					
	15			15.0	15.0	15.0
						Drive # 4
				D5.0		6" Auger
				R4.5		3" Inner Barrel
	16					
					NS	
	17					
	18					
			18.5 18.5		18.5	EL. 1445.2
	19		weathered bedrock		J4	
			shale, soft			
			weathered to gray clay +			
			red/brown limonite stains		19.5	
					NS	
	20			20.0	20.0	20.0
		Top of coal				5" Tricone Bit cleaned out
				20.5	20.5	20.5
	21			1	WAX 1 Box 1	Pull # 1 4" Core Barrel Began 1419 Ended 1600 Run 8.0 Rec 7.5 Loss 0.5 W.L. 6.0
		slickensided				
	22					

ENG FORM 1836-A JUN 67 (ER 1110-1-1801) GPO 1980 OF-628-603 | PROJECT: Wilson Dam | HOLE NO. I 43-1A

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** I43-1A

PROJECT: Wilson Dam | INSTALLATION: KCP | SHEET 3 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	22	Break 22.2			22.2	Pull'n #1 cont Start 14:19 End 16:00 Run 8.0 Rec 7.5 Loss 0.5 U.L 0.0 Core very difficult to clean off 10' core barrel used 3/6 revert to 130 gals H2O Viscosity 37 sec.
	23				WAX 2 Box 1	
	24	Break 24.2			24.2	
	25	Fracture zone			WAX 3 Box 1	
	26	Break 26.1			26.1	
	27				WAX 4 Box 1	
	28	Break 28.0			28.0	TD 28.0
			28.5	28.5	WAX 5 28.5	28.4
			shale, soft, gray, thin bedded, limonite nodules common			8-17-92 Pull'n 2 4" Core Barrel Start 7:09 Stop 8:59
	29	Break			WAX 5 29.7	
	30	Break			WAX 6	Swelled in at 25.0 in 36 hrs Run 10.0' Rec 9.5' Loss 0.5' U.L. 0.2'
	31	Break			31.2	
	32	Break			WAX 7 32.1	
	33	Break			WAX 8 33.3	
	34		possible zone of core loss		Box #2	

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No. I43-1A**

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 4 OF SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	34		Same as above			Pull #2 cont
			Shn - possible zone of core loss			Start 7:09
						Stop 8:59
	35					Run 10.0'
						Rec 9.8
						Loss 1.2
						M.L. 1.0
	36					
	37		Break			
			Break			
			Break		37.7 WAX 9	CD 37.7
	38			38.0	38.0	38.0
			slickenside, bentonite seam?			Pull #3
					WAX 9	4" core barrel 10' length
	39		slickenside, bentonite seam?		Box 2	Start 9:15
						Stop 11:02
			Break		39.6	Run 10.0.
						Rec 10.0.
	40					loss 0.0'
						M.L. 0.3
					Box 0 2	Difficulty getting core out of barrel pulled bottom
	41					Blew core out from 45.3 to 49.0.
						This drops on ground & fractured
	42		Break			
.3 ↑						
	43					
	44		Break			
			Break			
	45		possible zone of loss core			
			Break			
	46					

ENG FORM 1836-A JUN 67 (ER 1110-1-1801) GPO 1980 OF - 628 - 603 | PROJECT | HOLE NO.

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No. I 43-1A**

PROJECT: Wilson Dam | INSTALLATION: K<D | SHEET 5 OF 6 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	46		Same as above			Pull #3 cont
	47					
		Break				
		Break				
	4	Break				<D488
		Break				Pull 4 Start 12:30 End 12:55 Run 1.0' Rec 1.2' Gain 0.2 U.L 0.0
		Break				<D 488
	49		B.O.H = 49.0'. No H_2O during drilling			
			Sketch Map (not to scale)			
			I43-1A 26' 10' Road			
	50		channel Outlet			
						protective pipe EL 1466.73
						≈EL. 1463.76
			ground surface			
	0					grout 1:1
						4' Inclinometer 5 length of 10' casing + 4 joints total of 52.0 with 3' stick up
	10					
						Mix 47# Bentonite 94# cement 38 gal H_2O
	20		Bedrock			18.5'
	30					
						grout mix 1:1
	40					
	50					49.0' EL 1414.76

8-24-92

Hole No. I43-2

DRILLING LOG

DIVISION: M.R.D

INSTALLATION: KCD

SHEET 1 OF 5 SHEETS

1. PROJECT: Wilson Dam
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: USACE ED-GG
4. HOLE NO. (As shown on drawing title and file number): I43-2
5. NAME OF DRILLER: R. Hunter
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 30.0
8. DEPTH DRILLED INTO ROCK: 19.0
9. TOTAL DEPTH OF HOLE: 49.0
10. SIZE AND TYPE OF BIT: 6" Auger, 4" Core Barrel, 5 5/8 Rock Bit
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 750
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: 5 Jars; UNDISTURBED:
14. TOTAL NUMBER CORE BOXES: 1
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 8/17/92; COMPLETED 8/18/92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Fred Z. Hart

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		Gravel Rip Rap	NR	NS	Dug by hand
	2		2.0	2.0	2.0	2.0
			silty lean clay, med. damp brown gravel 10%	J1 D3.0 R2.0	J1	Drive 1 6" Auger 3" Inner Barrel
	3			3.0	3.0 NS	
			3.5 3.5 fine-med sand, loose, damp lt brown to orange occ coarse sand pebbles to 1" subangular			
	4					
	5			5.0	5.0	5.0
				D6.0 R2.5	J1	Drive 2 6" Auger 3" Inner Barrel
	6				6.0	
	7				NS	
	8					
	9					
	10					

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE

PROJECT

HOLE NO.

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** I 43-2

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 2 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10.0		fine sand, loose, damp brown occ clay nodules			
					J3	Drive # 3 6" Auger 3" Inner Barrel
				D5.0 R2.5		
	11				11.0	
	12					
					N5	
	13					
	14					
	15		15.0	15.0	15.0	15.0
			fine to med sand, loose damp, lt brown to tan pebbles to 1½" subangular			
					J4	Drive # 4 6" Auger 3" Inner Barrel
	16			D5.0 R2.5	16.0	
	17					
					N5	
	18					
	19					
	20			20.0	20.0	20.0
						Drive # 5 6" Auger 3" Inner Barrel
				D5.0 R2.0		
	21				N5	
	22					

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** I 43-2

PROJECT: Wilson Dam | INSTALLATION: KSD | SHEET 5 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	22		same as above		(cont)	Drive #5 cont
				D5.0 R2.0 (cont)	NS	
	23					
	24					
	25			25.0	25.0	25.0
						Drive #6
						6" Auger
						3" Inner Barrel
	26			D5.0 R2.5		
	27				NS	
	28					
	29					
	30		30.0 Top of Bedrock weathered shale, soft, lt gray to white, massive red/brown limonitic alteration to 15% (rock terms)	30.0	30.0	30.0 EL. 1433.5
				D1.0 R1.0	J5	Drive #7 6" Auger 3" Inner Barrel
	31			31.0	31.0	31.0 6" Flight Auger Augered out
	32			NR	NS	
				32.6	32.6	32.6 5" Tricone Rock bit cleaning Hole
	33		Top of core	33.5	33.5	33.5
			spin possible zone of core loss		WAX 1	Pull #1
	34					

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** I 43-7

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 4 OF 5 SHEETS

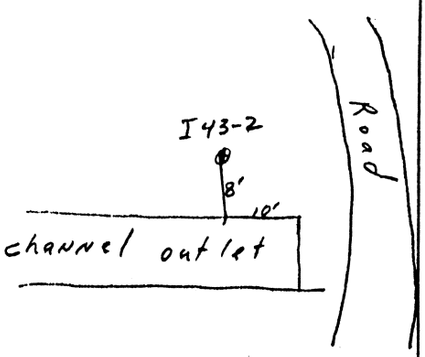
ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	34		same as above		CON	Pull #1 cont
					WA1	4" core barrel
						Start 10:15
						Stop 11:28
	35		35.0			run 5.4'
			Shale, soft, massive,			rec 4.9
			ltgray with lt brown to			loss 0.5
		MB	black. clay			u.L
			very clay rich		35.6	
						316s revert to 190 gal H2O
	36				WAX 2	
	37					
		MB			37.6	
					WAX 3	
	38					
		MB			38.5	CD 38.5
				38.7	WAX 4	38.7 38.7
	39				38.7	
					WAX 4	Pull # 2
						4" core barrel
						Start 11:50
	40	MB			40.1	End 12:47
						run 9.8 to 48.5
					Wax	rec 9.8
	41				5	loss 0.0
						u.gain 0.2
						bottom tape check
						is possible wrong
	42	MB			42.1	(per. driller)
			42.4	42.4		
			siltstone, soft, massive,			
			ltgray to black		Wax	
	43				6	
	44					
		MB			44.1	
					Wax	
					7	
	45	MB				
		MB			45.1	
					Wax	
					8	
	46					

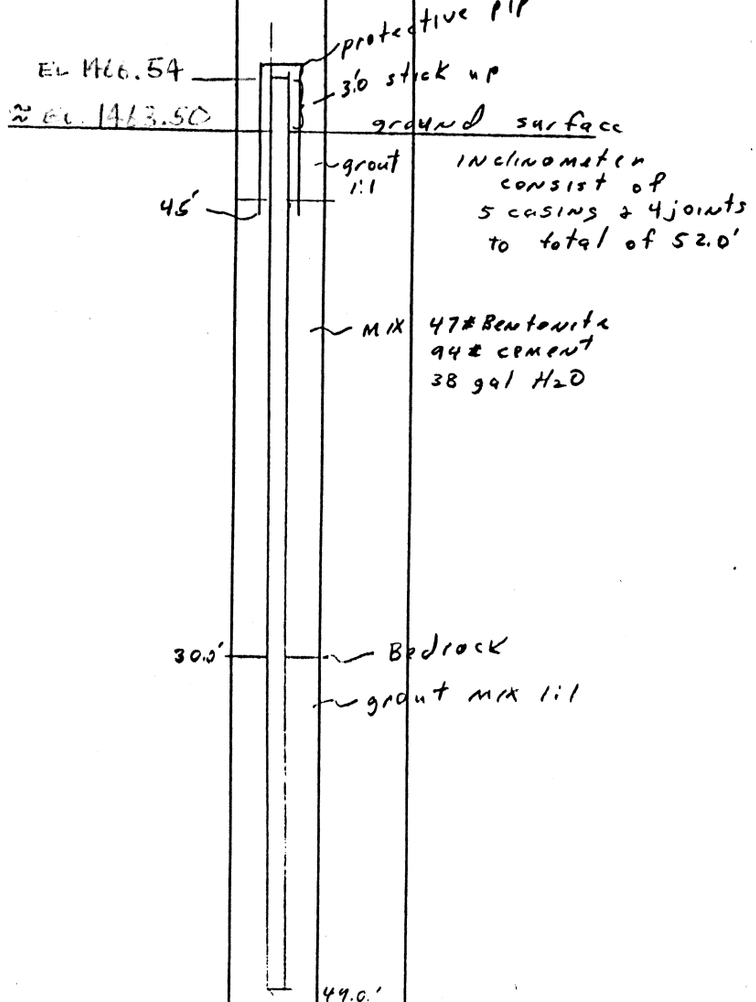
DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** I43-2

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 5 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	46		Same as above			Pull #2 cont
			46.1 Shale, soft, massive, 46.1 ltgray to dkgray/black clayrich.		Wax 8	
	47				47.1	
					Wax 9	
	48				48.3	CD 48.1
			48.5	48.5	NS 48.5	48.5 Rock bit 5" Tricone
	49		49.0	49.0	49.0	49.0
			B.O.H = 49.0. No H2O during drillings.			

Sketch Map





ENG FORM 1836-A (ER 1110-1-1801) GPO 1980 OF-628-603 | PROJECT | HOLE NO.

8 of 1-C

Hole No. I 43-3

DRILLING LOG	DIVISION MRD	INSTALLATION KCD	SHEET 1 OF 5 SHEETS

1. PROJECT: Wilson Dam
2. LOCATION (Coordinates or Station): See Sketch Map
3. DRILLING AGENCY: USACE ED-GG
4. HOLE NO. (As shown on drawing title and file number): I 43-3
5. NAME OF DRILLER: R. Hunter
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 31.0
8. DEPTH DRILLED INTO ROCK: 18.0
9. TOTAL DEPTH OF HOLE: 49.0
10. SIZE AND TYPE OF BIT: 6" Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 750
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 3 Jars; UNDISTURBED —
14. TOTAL NUMBER CORE BOXES: 1
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 8/18/92; COMPLETED 8/18/92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Fred Z Hunt

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	1		gravel Rip Rap/gravel/ loose sand			Dug by hand
	2		2.0 2.0	1.9	1.9	1.9
			silty lean clay, med, damp brown occ gravel occ sand		NS 2.0	Drive 1. 6" Auger 3" Inner Barrel
	3			D2.2 R1.5	J1	
					2.0	
					N	
	4			4.3	4.3	4.3
					NS	Drive #2 6" Auger 3" Inner Barrel
	5		5.0 5.0	D5.0 R2.5	5.0	
			fine-med sand, loose, damp, lt brown to orange brown occ pebbles to 1½" sub angular occ coarse sand		J2	
	6				6.0	
					NS	
	7					
	8					
	9			9.3	9.3	9.3
				D5.0 R2.5	NS	Drive #3 6" Auger 3" Inner Barrel
	10					

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

Hole No. I 43-3

PROJECT: Wilson Dam

INSTALLATION: KCD

SHEET 2 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		same as 960ca	cont	cont	Drive # 3 cont
				D5.0 R2.5	NS	
	11					
	12					
	13					
	14			14.3	14.3	14.3
						Drive # 4 6" Auger 3" Inner Barrel
	15			D5.0 R2.5	NS	
	16					
	17					
	18					
	19			19.3	19.3	19.3
						Drive # 5 6" Auger 3" Inner Barrel
	20			D5.0 R2.0	NS	
	21					
	22					

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | Hole No. I43-3

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 3 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	22		same as above	cont	cont	Drive #5 cont 6" Auger 3" Inner Barrel
	23				NS	
	24			24.3	24.3	24.3
	25			D5.0 R2.0		Drive #6 6" Auger 3" Inner Barrel
	26				NT	
	27					
	28					
	29		H2O noted by driller	29.3	29.3	29.3
	29.5		29.5			Drive #7
	30		sand, loose, wet, lt brown to orange brown w/cobbles to 1½" w/cc clay?		NS	6" Auger 3" Inner Barrel
	31		31.0 31.0 weather shale, soft, massive lt grey to red/brown limonitic alteration to 10%		31.0	EL. 1432.0
	32		(rock terms)		J3 32.0	
	33				NS	
	34					
	35					

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No. I43-3**

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 4, OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	34		same as above		NS	Drive # 7 cont
			Top of core	34.3	34.3	34.3
		MB			NS	clean out with 5" tricone
				34.5	34.5	34.5
	35					Pull #1
						4" core barrel
					Wax 1	start 0910
						stop 0955
						run 3.3
						rec 3.3
						loss 0.0
	36		36.0 36.0			u.l 0.0
			Weathered Shale, soft, massive			
		MB	lt grey to grey		36.5	
			noticable decrease			
		MB	in limonitic (red/brown)		Wax 2	315s revert to 155 gal H2O
	37	MB	alteration less than 5%			cased 33.5'
		MB				
		MB		37.7	37.8	C.O 37.8
	38					Pull # 2
						4" core barrel
					WAX 3	
	39					Start 10:05
						Stop 11:34
						run 9.2'
						rec 9.7 u.18.7
		MB			39.8	loss 0.5
	40		40.1 40.1			u.l 0.0
			Sandy Siltstone, massive soft, Lt Grey,		WAX 4	
	41	MB			41.1	
			41.5 41.5			
			Shale, soft, massive		WAX 5	
			lt grey to gry			
	42		[illegible]			
	43	MB			43.1	
	44				WAX 6	
			44.6 44.6			
			Sandy Siltstone, massive soft, Lt grey to grey			
	45	MB			45.1	
					WAX 7	
	46					

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PROJECT: Wilson Dam | HOLE NO. I43-3

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** I43-3

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 5 OF 5 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	46		same as above		con	Pull # 2
			black vein, hard with pyrite xtals		WAX 7	cont
			MB			C.D 46.5 T
					46.5 WAX 8	
	47			47.0	47.0	47.0
						Pull # 3
						4" Core Barrel
					WAX 8	start 11:45
						stop 12:10
	48					RUN 2.0
			black vein, hard w/ pyrite xtals			Rec 2.5
			MB			Loss 0.0
					48.5	Run 0.0
					Box 1	
	49		49.0	49.0		49.0
			B.O.H = 49.0. H_2O during drilling at 29.0'			
			Sketch Map (not to scale)			
			channel outlet			
	56		8' 10' I43-3			
						Protective casing not set
			EL 466.04			Place 10' pipe over top
			ground ≈ EL surface 463.0			
	0.0				1:1 grout	Inclinometer
						4' S length of casing
						10' long
						4 joints 1" long
						total length 52'
	10					
	20					
						MIX 47# Bentonite 94# cement 38 gal H_2O
	30					
				31'		Bedrock
	40					111 grout
	50					49.0'

Hole No. PZ43-1

DRILLING LOG

DIVISION: MRD

INSTALLATION: KCD

SHEET 1 OF 3 SHEETS

1. PROJECT: Wilson Dam
2. LOCATION (Coordinates or Station): see Sketch Map
3. DRILLING AGENCY: USACE ED-GG
4. HOLE NO. (As shown on drawing title and file number): PZ 43-1
5. NAME OF DRILLER: R. Hunter
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 14.8 (GS EL. 1464.6)
8. DEPTH DRILLED INTO ROCK: 11.2
9. TOTAL DEPTH OF HOLE: 26.0
10. SIZE AND TYPE OF BIT: 3" Hollow Stem Auger, 5⅞" Rock Bit, 4" Core Barrel
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 750
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: 3 Jars; UNDISTURBED: —
14. TOTAL NUMBER CORE BOXES: 1
15. ELEVATION GROUND WATER: None encountered
16. DATE HOLE: STARTED 9/2/92; COMPLETED 9/2/92
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: Fred T Hart

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			gravel			
			Rip Rap to 2½'; gravel, silty sand	NR	NS	Dug by hand
	1			1.5	1.5	1.5
						Drive #1
	2		2.0 2.0	D 3.3		3" Hollow Stem Auger
			Silty lean clay, med, dry, brown occ coarse sand	R 3.3		
					NS	
	3					
	4					
				4.8	4.8	4.8
	5		5.0 5.0			Drive #2
			fine - med sand, loose, dry, lt brown occ pebbles to 1½" occ coarse sand		NS	3" Hollow Stem Auger
	6				6.0	
				D 5.0	J1	
	7			R 2.5		
					7.0	
	8				NS	
	9					
				9.8	9.8	9.8
	10				NS	Drive #3

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PROJECT: Wilson D...

HOLE NO.

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No. PZ43-1**

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 2 OF 3 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		same as above			Drive #3 cont
						3" Hollow stem Auger
				D5.0		
				R4.2		
	11				NS	
	12					
	13		13.0 13.0		13.0	
			clayey sand, med, wet, brown to gray occ coarse sand occ pebbles		J2	
	14				14.0	
					NS	
			Top of Bed rock	14.8	14.8	14.8 El. 1449.9
	15		14.8 Shale, Massive, Soft 14.8 Badly weathered lt gray to reddish brown occ silty reddish brown altered material appears coarser grained		J3	Drive #4
						3" Hollow Stem Auger
					15.5	5 5/8" Clean Out Roock Bit
				D4.7 R4.7		
	16				NS	
	17					
	18					
	19					
			8 (Top of core)	19.5	19.5	19.5
	20					Pull # 1
						Start 0938
						Stop 1049
				NR	Box 1	Run 6.5
	21					Rec 6.7
						Loss 0.0
						U.L. 0.0
						Gain 0.2
	22			22.0	22.0	22.2

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** PZ 43-1

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 3 OF 3 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	22		Same as above		Box 1	Pull # 1 cont Start 0938 Stop 10:49 Kun 6.5 Rec 6.7 U.L 0.0 gain 0.2 2 lbs revert to 140 gal H_2O
	23	B		NR	23.3	
	24		coarser reddish brown (limonitic) alteration		WAX # 1	Water loss noted by driller at 24±5'
	25	B B			25.5 Box 1	
	26	26.0	26.0	26.0	26.0	26.0 SD
			B.O.H = 26.0 No refusal. No H_2O during drilling Loss of H_2O during drilling at 24.5'			
			Sketch Map (not to scale) PZ43-1 260' 4'			
	0					3' stick up
			grout mix 1:1		4	
	10		grout with 5% Bentonite			
			Bentonite		19.5 21.5	1467.4 - 26.0 1441.4
			sand			
	30				26.0	Screen from 23.5 to 25.0 Screen tip at 25.0' B.O.H at 26.0

DRILLING LOG

DIVISION: MRD

INSTALLATION: KCD

SHEET 1 OF 4 SHEETS

1. PROJECT: Wilson Dam
2. LOCATION (Coordinates or Station): See Sketch Map
3. DRILLING AGENCY: USACE ED-GG
4. HOLE NO. (As shown on drawing title and file number): PZ 43-2
5. NAME OF DRILLER: R. Hunter
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: 34.3 GS EL. 1419.23
8. DEPTH DRILLED INTO ROCK: 2.0
9. TOTAL DEPTH OF HOLE: 36.3
10. SIZE AND TYPE OF BIT: 3" ID Hollow Stem Auger
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: CME 75D
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: 3 Jars; UNDISTURBED: —
14. TOTAL NUMBER CORE BOXES: —
15. ELEVATION GROUND WATER: None encountered
16. DATE HOLE: STARTED 5/1/92; COMPLETED 9/1/92
17. ELEVATION TOP OF HOLE: —
18. TOTAL CORE RECOVERY FOR BORING: — %
19. SIGNATURE OF INSPECTOR: Fred Z Hall

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	0		gravel Rip Rap / silty sand / gravel to 2½'	NR	NS	Dug by hand
	2		2.0	2.0	2.0	2.0
			silty lean clay, damp med., gray	D 2.1 R 2.1	NS	Drive #1 3" Hollow stem Auger
	4			4.1	4.1	4.1
			4.6 4.6 fine to med sand, loose, damp lt brown occ gravel to 2½" occ coarse sand	D 5.0 R 3.0	NS 5.0 J1 6.0 N.S.	Drive #2 3" Hollow Stem Auger
	9			9.1	9.1 NS	9.1 Drive #3 3" Hollow Stem Auger
	10					

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PROJECT: Wilson Dam

HOLE NO.: PZ 43-2

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** PZ 43-2

PROJECT: Wilson Dam | INSTALLATION: KCD | SHEET 2 OF 4 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	10		same as above			Drive #3 (cont)
				D5.0		3" Hollow stem Auger
				R2.5	NS	
	11					
	12					
	13					
	14			14.1	14.1	14.1
						Drive #4
						3" Hollow Stem Auger
	15			D5.0		
				R2.5		
	16				NS	
	17					
	18					
	19					
				19.1	19.1	19.1
			19.5 19.5		NS	Drive #5
			fine clayey sand, loose			3" Hollow Stem
			dry, le brown			Auger
	20		occ clay balls		20.0	
33.4				D5.0		
				R2.5	V2	
	21					
					21.0	
9.85						
4'					NS	
	22					

ENG FORM 1836-A JUN 67 (ER 1110-1-1801) GPO 1980 OF-628-603

PROJECT | HOLE NO.

DRILLING LOG (Cont Sheet)

ELEVATION TOP OF HOLE

Hole No. PZ43-2

PROJECT: Wilson Dam

INSTALLATION: KCD

SHEET 3 OF 4 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	22		same as above	cont		Drive #5 (cont)
					NS	
	23					
	24			24.1	24.1	24.1
						Drive #6
						3" Hollow Stem Auger
	25			15.0		
				R2.5		
	26					
	27					
	28					
	29			29.1	29.1	29.1
			29.5 29.5			Drive #7
			fine clayey sand, loose, wet, lt brown			3" Hollow Stem Auger
	30					
	31					
	32					
	33					
	34					

DRILLING LOG (Cont Sheet) | ELEVATION TOP OF HOLE | **Hole No.** PZ43-2

PROJECT: Wilson | INSTALLATION: KCD | SHEET 4 OF 4 SHEETS

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV-ERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	34		same as above			same as above
			34.3 34.3 Top of Bedrock	34.1	34.1	34.1 EL. 429.9
			weathered Shale, Massive, Soft lt gray to red/brown Highly altered	D2.3 R2.3	NS	Drive #8 3" Hollow Stem Auger
	35				35.0	
					J3	
					35.3	
					N?	
	36		36.3	36.3	36.3	36.3
			B.O.H = 36.3. No refusal.			No H_2O during drilling
	37		Sketch Map (not to scale)			
			channel outlet Road 8' 5' PZ43-2			
	38					
	39			39.1	39.1	39.1
0			grd. level			30' stick-up
			grout mix 1:1			
					4.0'	
	10					
			grout with 5% Bentonite			
	20					
					28.0	
	30		Bentonite			screen from 33.8-35.3
			PZ43-2 sand		31.2	1.5' screen, Tip set at 35.3
					36.3	B.O.H. 36.3
	40					